WHAT IS CLAIMED IS

1. A routing control method in a mixed environment of a hierarchial network and a non-hierarchial network, comprising:

assigning the non-hierarchial network a virtual hierarchy number that corresponds to a hierarchy number in the hierarchial network,

attaching the virtual hierarchy number to a packet to be relayed at a router located at an entrance from the non-hierarchial network to the hierarchial network when the packet is to be relayed between non-hierarchial networks via the hierarchial network,

performing a hierarchial routing control by the virtual hierarchy number within the hierarchial network, and

removing the virtual hierarchy number from the packet to be relayed at a router located at an exit from the hierarchial network to the non-hierarchial network.

2. The routing control method in the mixed environment of the hierarchial network and the non-hierarchial network as claimed in claim 1, wherein an address of the non-hierarchial network is accommodated in an interface identification information block of an address format of the hierarchial network, and the virtual hierarchy number is accommodated in a hierarchy information block of the address format of the hierarchial network for conventional packet relaying defined in the hierarchial network and transmitting routing information.

3. The routing control method in the mixed environment of the hierarchial network and the non-

hierarchial network as claimed in claim 2, wherein each router of the hierarchial network comprises a hierarchial routing table that performs routing search by using only the hierarchial information block as a key, and a conventional routing table that performs routing search by using the hierarchial information block hierarchial information and the interface identification information block as keys.

4. The routing control method in the mixed environment of the hierarchial network and the non-hierarchial network as claimed in claim 3, wherein each router of the hierarchial network uses the hierarchial routing table when relaying a packet between the hierarchial network and another hierarchial network.

5. The routing control method in the mixed environment of the hierarchial network and the non-hierarchial network as claimed in claim 3, wherein each router of the hierarchial network uses the conventional routing table when relaying a packet from the hierarchial network to the non-hierarchial network, and from the non-hierarchial network to the hierarchial network.

6. The routing control method in the mixed environment of the hierarchial network and the non-hierarchial network as claimed in claim 5, wherein the router located at a boundary of the non-hierarchial network and the hierarchial network recognizes a packet relay from the non-hierarchial network to the hierarchial network, and from the hierarchial network to the non-hierarchial network, by using a receiving interface name and a transmission interface name when relaying the packet.

7. A routing control apparatus in a mixed environment of a hierarchial network and a non-hierarchial network, comprising:

virtual hierarchy number assigning means for assigning the non-hierarchial network a virtual hierarchy number that corresponds to a hierarchy number in the hierarchial network, and for attaching the virtual hierarchy number to a packet to be relayed at a router located at an entrance from the non-hierarchial network to the hierarchial network when the packet is to be relayed between non-hierarchial networks via the hierarchial network,

routing control means for performing a hierarchial routing control by the virtual hierarchy number within the hierarchial network, and

virtual hierarchy number removing means for removing the virtual hierarchy number from the packet to be relayed at a router located at an exit from the hierarchial network to the non-hierarchial network.

8. The routing control apparatus as claimed in claim 7, wherein the virtual hierarchy number assignment means accommodates an address of the non-hierarchial network in an interface identification information block of an address format of the hierarchial network, and accommodates the virtual hierarchy number in a hierarchy information block of the address format of the hierarchial network for performing conventional packet relay defined in the hierarchial network and transmitting routing information.

9. The routing control apparatus as claimed in claim 8, wherein each router of the

hierarchial network comprises a hierarchial routing table that performs routing search by using only the hierarchial information block as a key, and a conventional routing table that performs routing search by using the hierarchial information block hierarchial information and the interface identification information block as keys.

10. The routing control apparatus as claimed in claim 9, wherein each router of the hierarchial network comprises hierarchial routing search means that performs routing search using the hierarchial routing table when relaying a packet between the hierarchial network and another hierarchial network.

11. The routing control apparatus as claimed in claim 9, wherein each router of the hierarchial network comprises conventional routing search means that performs routing search using the conventional routing table when relaying a packet from the hierarchial network to the non-hierarchial network, and from the non-hierarchial network to the hierarchial network.

12. The routing control apparatus as claimed in claim 11, wherein the router located at a boundary of the non-hierarchial network and the hierarchial network comprises recognition means that recognizes a packet relay to be from the non-hierarchial network to the hierarchial network, and to be from the hierarchial network to the non-hierarchial network, using a receiving interface name and a transmission interface name when relaying the packet.